

**AMENDMENTS TO THE DRAWINGS**

The attached sheet of drawings includes changes to Fig. 10 to add an alternative (shown as dotted line) fixing bias voltage provided by bias device 105 to the heating roller 77.

Attachment:      Replacement sheet  
                         Annotated Sheet

### **REMARKS**

Claims 4-6, 11-13, 17, 18, and 23 are present in this application. Claims 13 and 23 are independent claims. Claims 1-3, 7-10, 14-16, and 19-22 have been canceled.

### **Drawing Objection**

The drawings have been objected to for not showing every feature in the claims. In particular, the Office Action indicates that the claimed feature “the potential given member also functions as a heating member for heating the surface of the pressure member, of claim 13, must be shown in the drawings.

Accordingly, Fig. 10 has been amended to show second fixing bias voltage, provided by bias device 105, applied to the heating roller 77 (shown as the added dotted line, depicting the alternative application of the fixing bias voltage from bias device 105 to heating roller 77).

Support for this amendment is provided in the specification at page 68, second full paragraph, which states “the second fixing bias voltage may be applied to the heating roller 77, not the cleaning roller 102.”

Further according to the specification, Fig. 10 shows a fixing device 111 configured such that the bias device 105 applies the fixing bias voltage through the cleaning roller 102 to the surface of the pressure roller 32 and the bias device 94 applies the fixing bias voltage to the conductive core bar 61 of the fixing roller 31. (specification at page 67, lines 9-19). Thus, in the alternative case in which the second fixing bias voltage may be applied to the heating roller 77, the fixing bias voltage is applied through the heating roller 77 to the surface of the pressure roller 32.

In such case the heating roller 77 functions both to heat the surface of the pressure member 32 (i.e., a potential given member that functions as a heating member), as well as to apply the bias voltage to a surface of the pressure member (i.e., potential given member applying voltage to the surface of the pressure member).

Provided the amendment to Fig. 10, Applicants submit that every feature of claim 13 is shown in the drawings. Applicants request that the objection to the drawings be reconsidered and withdrawn.

### **§ 102/103 Rejections**

With regard to the various rejections of claims 1-12 and 14-22, Applicants have rewritten claim 13 into independent form and canceled claims 1-3, 7-10, 14-16, and 19-22. Subsequently, Applicants submit that the rejections of claims 1-12 and 14-22 no longer apply.

### **§ 103(a) Rejection – Claim 23**

Claim 23 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,331,385 (Ohtsuka) in view of US 2002/0186981 (Takeuchi), and further in view of U.S. Application Publication 2004/0190929 (Yoshiki). Applicants respectfully traverse this rejection.

### **The Rejection Fails to Establish that the Claimed Invention as a Whole would have been Obvious**

An object of the present invention is to prevent image failure due to reverse polarity toner (specification at page 4, second paragraph). According to the present specification, when a conventional fixing device carries out fixing with respect to a large number of printing mediums 91, reverse polarity toner 92 is removed from the printing medium 91, the reverse polarity toner 92 adheres to the pressure roller 32, and then adheres to the fixing roller 31, and as a result, the image failure or the image defect occurs on the surface and back surface of the printing medium 91. (specification at page 52, first full paragraph).

Subsequently, a goal of the present invention is to cause the reverse polarity toner 92 to effectively stay on the printing medium 91 as it passes through the fixing roller 31, and not adhere to the pressure roller 32 (see Fig. 6; specification at page 53, lines 1-11).

Fig. 7, for example, shows results regarding a relation between the fixing bias voltage and the degree of the image failure. According to the results, the performance of preventing the image failure is high when the fixing bias voltage is high or when the surface resistivity of the

surface insulating layer 63 of the fixing roller 31 is high. As an example, in a high-speed apparatus whose speed of feeding the printing medium is high and whose processing speed is high, the surface resistivity is increased. Subsequently, by keeping the timer for maintaining the electric charge on the surface of the fixing roller 31 for 0.2 second or longer and by keeping a long time for allowing the electric charge to leak and decay, it is possible to cause the reverse polarity toner 92 to effectively stay on the printing medium 91. (specification at page 55).

The Office Action alleges that Ohtsuka discloses a holding electric field generating means (power source 19, Fig. 2) for generating a holding electric field which is an electric field in a direction for holding a reverse polarity developer on the printing medium (e.g., a bias voltage is created to be the same as the toner (col. 4 lines 45-48) which would clearly attract any reverse polarity toner on the non-imaging surface of the printing medium to be attracted towards the printing medium).

However, an object of the present invention is to cause the reverse polarity toner to effectively stay on the printing medium. This aspect is covered by claim 23, which requires “holding electric field generating means for generating a holding electric field which is an electric field in a direction for holding a reverse polarity developer on the printing medium.” Applicants submit that the allegation in the Office Action that Ohtsuka’s bias voltage would attract any reverse polarity toner on the non-imaging surface of the printing medium is not supported by the disclosure in Ohtsuka. Applicants submit that Ohtsuka fails to disclose at least this claimed feature of generating a holding electric field which is an electric field in a direction for holding a reverse polarity developer on the printing medium.

The Office Action further alleges that because Ohtsuka discloses a fixing roller provided with potential having the same polarity as the toner and a pressing roller provided with a potential having a polarity opposite from that of toner, that Ohtsuka would clearly disclose holding reverse polarity toner on the printing medium. The Office Action concludes that “the absence of the disclosure regarding “reverse polarity toner” does not preclude the structure from meeting Applicant’s claimed invention.” (Office Action at page 15, section “Response to Arguments”).

In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983).

"[A] patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is part of the 'subject matter as a whole' which should always be considered in determining the obviousness of an invention under 35 U.S.C. § 103." *In re Sponnoble*, 405 F.2d 578, 585, 160 USPQ 237, 243 (CCPA 1969). MPEP § 2141.02

Applicants submit that the absence of disclosure regarding "reverse polarity toner" is evidence that Ohtsuka does not address the problem solved by the present invention. (MPEP § 2141.02). Also, Applicants submit that because of the absence of disclosure of "reverse polarity toner," the rejection fails to establish *prima facie* obviousness.

At least for these reasons, Applicants submit that the rejection fails to establish *prima facie* obviousness and must be withdrawn.

### **Ohtsuka and Yoshiki Fail to Disclose the Claimed Structure**

In addition, claim 23 covers subject matter from claim 1, as well as a specific features of the thermostat 65 (Fig. 1), fixing member 31, frame 82, and bearing holder 83. According to claim 23, the ball bearing is "supported by a frame via a bearing holder made of material having thermal plasticity."

According to the specification at page 59, when the halogen lamp 64 is continuously turned on because of some kind of abnormality, the thermistor 66 will normally detect that the surface temperature of the fixing roller 31 is not within a temperature control range. However, in some cases, temperature control is not properly carried out, and abnormal overheating of the fixing device leading to a malfunction. Also, the time to reach abnormal overheating of the fixing roller and malfunction is short. (specification at page 60).

Subsequently, according to the specification at page 61, "in the fixing device 14 of the present embodiment, the bearing holder 83 is made of a thermoplastic material, and the

thermostat 65 is provided on, for example, the frame 82. Therefore, when the abnormal overheat occurs, the bearing holder 83 receives the heat of the abnormal overheat, and also receives pressure load of the fixing roller 31 and the pressure roller 32. On this account, the bearing holder 83 becomes deformed and is melted, and the gap provided between the thermostat 65 and the fixing roller 31 becomes narrow. As a result, the thermostat 65 easily reacts to an excessive temperature rise of the fixing roller 31, and operates quickly.”

This aspect is covered in claim 23 as “a thermostat which cuts off power distribution to said heating means in response to an excessive temperature rise of said fixing member, the thermostat being provided on said frame so that, in case abnormal overheat occurs, the bearing holder is deformed and melted as a result of its receiving (i) heat of the abnormal overheat, and (ii) pressure load of the fixing member and the pressure member, the deformation and melting of the bearing holder resulting in narrowing a gap between the thermostat and the fixing member.”

The Office Action relies on Ohtsuka for teaching a fixing roller 1 (claimed fixing member), a thermistor 9 (claimed thermostat), and a frame (not shown) (Office Action at page 11, paragraph 10). The Office Action relies on Yoshiki for teaching a ball bearing 18 (Office Action at paragraph 12). The Office Action refers to bearing case 17 of Yoshiki as teaching the claimed bearing holder.

Ohtsuka discloses that “On the surface of the fixing roller 1 having a heater 10 therein, a temperature detector in the form of a thermistor 9 is positioned, and the heater is on-off controlled so that the temperature detector 9 detects a constant temperature. Ohtsuka does not disclose that the thermistor is provided on a side wall of the fixing apparatus.

As can be seen in Fig. 7 of Yoshiki, Yoshiki’s bearing case 17 is mounted in side walls 10a of the developing device (stated in para. 0064; see also, Figs. 10-12). Yoshiki does not teach a thermostat. As admitted in the Office Action, Ohtsuka discloses a temperature detector 9 and a conventional frame. At least because Yoshiki does not disclose a bearing case mounted in a frame and Ohtsuka does not disclose that the thermistor 9 is provided on a side wall of the fixing apparatus, Applicants submit that Yoshiki and Ohtsuka, either alone or in combination, fail to

teach the claimed structure, such that in case of abnormal overheat, deformation and melting of the bearing holder result in narrowing a gap between the thermostat and the fixing member.

At least for these additional reasons, Applicants submit that the rejection fails to establish *prima facie* obviousness and must be withdrawn.

### CONCLUSION

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert Downs Reg. No. 48,222 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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Attachments